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NEW CYPERACEAE AND POACEAE RECORDS FROM ALABAMA

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ABSTRACT

Seven species of vascular plants are reported as new to Alabama, three species excluded from the *Annotated Checklist of the Vascular Plants of Alabama*, and the Alabama Plant Atlas are documented as definite escapes, and new county records are included for two uncommon species. Those species reported as new for the state are *Cyperus reflexus, Eustachys caribaea, Eustachys distichophylla, Polypogon interruptus, Phyllostachys nigra* var. *nigra, Phyllostachys nigra* var. *henonis, Phyllostachys sulphurea* var. *viridis,* and *Pseudosasa japonica. Phyllostachys aureosulcata, P. bambusoides,* and *P. meyeri* are confirmed as escaped and naturalized in the state. New county records are reported for *Coelorachis tuberculosa* and *Rottboellia cochinchinensis.*

KEY WORDS: Alabama, Cyperaceae, Poaceae, new distribution records

New records for native and non-native grass and sedge species have accumulated for Alabama as a result of field studies. A complete set of the voucher specimens unless otherwise noted is housed at TROY, UWAL, and VDB. County and state records were determined using the Alabama Plant Atlas (Kral et al. 2013), the North American Plant Atlas (BONAP 2011), and searches of literature.

Coelorachis tuberculosa (Nash) Nash (Poaceae)

Voucher: **USA. Alabama**. Escambia Co.: Dry depression pond on W side of Conecuh National Forest Road 311, 4/5 mi S of Forest Service Road 305; 31.093373° -86.753236°, 20 Nov 2008, *Diamond with P.C. Harris 20464.*

This represents the first report of this taxon from Escambia Co., Alabama. It has been reported from Covington, Geneva, and Houston counties to the east and Baldwin County to the west in Alabama; and Santa Rosa and Okaloosa counties (Florida) to the south (Allen 2003; Wunderlin & Hansen 2008; BONAP 2011; Kral et. al 2013). This species is listed as a S1 species (Critically imperiled in Alabama because of extreme rarity (5 or fewer occurrences of very few remaining individuals or acres) or because of some factor(s) making it especially vulnerable to extirpation from Alabama.) by the Alabama Natural Heritage Progran (2012). Several dozen individual clumps were present at this site. The site is a seasonally wet depression pond with a few stunted gum trees (*Nyssa biflora* Walt.) located within the Conecuh National Forest (Fig. 1). As such, the site should be protected from development or draining.

Cyperus reflexus Vahl (Cyperaceae)

Voucher: **USA. Alabama**. Crenshaw Co.: Under the US Hwy 331 bridge at the N side of the Patsaliga River, 31.725609° -86.279103°, 30 Apr 2000, *Diamond 11674.*

This represents the first report of this taxon from Alabama (Tucker et. al 2002; Kral et. al 2011, 2013). It has been reported from Florida, Louisiana, Oklahoma, and Texas (Tucker et. al 2002; Wunderlin & Hansen 2008; BONAP 2011). In Florida this species is present in Escambia and Washington Counties adjacent to Alabama (Wunderlin & Hansen 2008). The collection site was

heavily disturbed by flooding and repair work on the bridge, and the plant does not appear to have persisted. It should however be looked for in other suitable sites in south Alabama.

Eustachys caribaea (Spreng.) Herter (Poaceae)

Vouchers: **USA. Alabama**. Henry Co.: US Hwy 431 just N of the railroad tracks in Headland, abundant on the roadside, full sun, dry sandy soil, 31.362361° -85.327361°, 8 Apr 2012, *Diamond 22914*. Houston Co.: Dothan, US Hwy 84, 0.29 mile east of the Circle, disturbed roadside in full sun, common, 31.212600° -85.358079°, 30 April 2013, *Diamond 23960*.

This represents the first reports of this taxon from Alabama (Kral et. al 2011, 2013). This South American species was first collected in the United States from Calcasieu Parish in Louisiana in 1985 (McKenzie et al. 1987). It has since been reported from the adjacent states of Georgia and Mississippi (Aulbach 2003, BONAP 2011). The species seems well established at both locations with hundreds of plants present. Both populations were confined to roadsides and had not spread into adjacent fields or wooded areas (Fig. 2).

Eustachys distichophylla (Lag.) Nees (Poaceae)

Voucher: **USA. Alabama**. Pike Co.: Disturbed sandy roadside in full sun on Pike County Hwy 1, 7/10 mi W side of the Conecuh River, 31.837389° -86.037639°, 7 Aug 2008, *Diamond 19716*.

This represents the first report of this taxon from Alabama (Kral et. al 2011, 2013). Previously it has been reported from California, Florida, and Georgia (Aulbach 2003; BONAP 2011; Wunderlin and Hansen 2008). This population seems well established on the roadside, and has spread to an adjacent hay field. Since the first observation of this species, it has spread to scattered areas along this same road as well as several nearby roads. It is possible that this species is being spread by highway maintenance, particularly bush-hogging of the roadsides (Fig. 3).

Polypogon interruptus Kunth (Poaceae)

Vouchers: **USA. Alabama**. Conecuh Co.: Abundant in wet, sandy roadside ditch on US Hwy 31, 0.02 mi N of Mill Creek, 31.437000° -86.915722°, 6 Jun 2011, *Diamond 20753*. Mobile Co.: Pine Crest Cemetery on E side of Dauphin Island Parkway, common in low areas with mucky soils bordering remnant swale with scattered *Taxodium distichum*, 30 Apr 2013, *Horne 2132* (UWAL), 19 May 2013, *Horne 2194* (AMAL); Mobile, disturbed back lot of Barry A. Vittor & Associates, Inc., 8060 Cottage Hill Road, 13 May 2013, *Horne 2172* (AMAL); Mobile, scattered individuals under N side of Less Lane Bridge over Moore's Creek. 30 ° 37' 10.52" North, 88 ° 07' 39.34" West, 15 May 2013, *Horne 2179* (AMAL); Theodore, several plants in wet soils along N side of Rabbit Creek, directly E of Hwy 90 bridge over creek, 22 May 2013, *Horne 2202* (AMAL).

This represents the first reports of this taxon from Alabama (Kral et. al 2011, 2013). Previously it has been reported from several western and mid-western states, New York, and Wisconson (Barkworth 2007; BONAP 2011). The Conecuh County location where this species was collected has been the site of numerous "landslides" over the years resulting in road closures. The Alabama Department of Transportation has repeatedly attempted to stabilize the steep roadside banks both mechanically and by establishing vegetative cover. The species has also been found at several locations in Mobile County, often associated with bridges. It is possible that this species is being spread through roadside and bridge maintenance in these areas. It should be looked for in other areas of south Alabama (Fig. 4).

Phyllostachys aureosulcata McClure (Poaceae)

Vouchers: **USA**. **Alabama**. Autauga Co.: Upper Kingston Road, 0.13 mi N of Live Oak Drive at Wilderness Park, large stand in the woods, culms dark green with yellow stripe in groove, 4-5 inches in diameter, 32.478639° -86.481139°, 3 Feb 2013, *Diamond with P.C. Harris 23710.* Wilcox Co.: Dirt logging road ca. 1.50 mi due E of Alabama Hwy 28, sandy soil of pine plantation, culms green with yellow stripe, 32.026833° -87.294861°, 24 Feb 2013, *Diamond with P.C. Harris, B. Keener, and W. Webb 23755.*

Previously this species was reported from Calhoun and Lee counties of Alabama by BONAP (2011) but was excluded from the *Annotated Checklist of the Vascular Plants of Alabama* (Kral et. al 2011), and the Alabama Plant Atlas (Kral et. al 2013) by the Flora of Alabama Checklist Committee. These collections document the species as an established part of the state's flora (Figs. 5, 6). This species was not treated in *Flora of North America* (Stapleton & Barkworth. 2007b). The Wilcox county site was originally established around 1960 as part of Auburn University's experiments with bamboo as a possible source of pulp for paper production (Sturkie et. al 1968). The experiments were abandoned and the area converted to pine plantation, but the bamboo has persisted and spread to adjacent areas via rhizomes.

Phyllostachys bambusoides Sieb. & Zucc. (Poaceae)

Vouchers: **USA**. **Alabama**. Butler Co.: Butler County Hwy 45, 0.08 mi N of Butler County Hwy 16, hardwood slope on the W side of the road, culms 6-8 inches in diameter, 30 feet in height, dark green or glaucous, 4 Aug 2012, 31.623611° -86.606528°, *Diamond 23219*; Butler County Hwy 57 at Industry Church, large stand in the woods S of the cemetery, stems green, 4-6 inches in diameter, 31.603076° -86.608014°, 5 Jan 2013, *Diamond 23638.* Elmore Co.: Wetumpka, US Hwy 231 at Green Street, wooded area on the W side of the road, sandy clay soil, common, 32.540972° -86.198139°, 3 Feb 2013, *Diamond with P.C. Harris 23719.* Montgomery Co.: Montgomery, Paul Road, 0.2 mi S of the Birmingham Highway, full sun, disturbed soil, culms to 4 inches, green, 32.365389° -86.356111°, 10 Feb 2013, *Diamond with P.C. Harris 23735.*

Previously this species was reported from Jackson and St. Clair counties of Alabama by BONAP (2011) but was excluded from the *Annotated Checklist of the Vascular Plants of Alabama* (Kral et. al 2011) and the Alabama Plant Atlas (Kral et. al 2013) by the Flora of Alabama Checklist Committee. These collections document the species as an established part of the state's flora (Fig. 7). *Phyllostachys bambusoides* is widely cultivated and several varieties are commonly available (Stapleton & Barkworth 2007b).

Phyllostachys meyeri McClure (Poaceae)

Voucher: **USA**. **Alabama**. Wilcox Co.: Dirt logging road ca. 1 mi due E of Alabama Hwy 28, sandy soil of pine plantation, culms yellowish without compressed nodes at base, 32.022056° -87.297528°, 24 Feb 2013, *Diamond with P.C. Harris, B. Keener, and W. Webb 23753.*

Previously this species was reported from Houston Co., Alabama by BONAP (2011), but was excluded from the *Annotated Checklist of the Vascular Plants of Alabama* (Kral et. al 2011) and the Alabama Plant Atlas (Kral et. al 2013) by the Flora of Alabama Checklist Committee. This collection documents the species as an established part of the state's flora. This species was not treated in *Flora of North America* (Stapleton & Barkworth 2007b). The Wilcox county site was possibly originally established around 1960 as part of Auburn University's experiments with bamboo as a possible source of pulp for paper production (Sturkie et. al 1968). It has since spread via rhizomes over a large area of a pine plantation.

Phyllostachys nigra (Lodd. ex Lindl.) Munro var. **nigra** (Poaceae)

Vouchers: **USA**. **Alabama**. Escambia Co.: Brewton, Hickory Street, 0.05 mi E of Mildred Street, large stand on vacant lot, mature culms black, full sun, sandy soil, 31.102105° -87.069455°, 28 Dec 2012, *Diamond 23618*. Crenshaw Co.: Luverne, Coston Avenue, 0.07 mi S of US Hwy 29, vacant lot on the E side of the road, abundant, culms black, 31.715250° -86.261056°, 19 Jan 2013, *Diamond 23665*.

This represents the first reports of this taxon from Alabama (Kral et. al 2011, 2013) (Fig. 8). The species without varietal status has been reported from the adjacent states of Georgia, Mississippi, and Tennessee (BONAP 2011). This species was not treated in *Flora of North America* (Stapleton & Barkworth. 2007b).

Phyllostachys nigra (Lodd. ex Lindl.) Munro var. **henonis** (Mitford) Stapf ex Rendle (Poaceae)

Vouchers: **USA**. **Alabama**. Conecuh Co.: Evergreen, wooded area along a small stream W side of the old Evergreen Cemetery, E of Evergreen Baptist Church, disturbed woodland with many exotics, stems grey, to 4 inches in diameter, 31.434921° -86.950200°, 29 Dec 2012, *Diamond 23622*. Autauga Co.: Upper Kingston Road, 0.13 mi N of Live Oak Drive at Wilderness Park., large stand in the woods, culms grey in color, 4-5 inches in diameter, 32.478639° -86.481139°, 3 Feb 2013, *Diamond with P.C. Harris* 23709. Wilcox Co.: Dirt logging road ca. 1.02 mi due E of Alabama Hwy 28, sandy soil of pine plantation, culms large, grey, 32.023950° -87.296683°, 24 Feb 2013, *Diamond with P.C. Harris, B. Keener, and W. Webb 23754*. Bullock Co.: Bullock County Hwy 19, 0.4 mi E of the Pike County line, planted pine woods along small drain, large culms, grey in color, 31.916361° -85.784472°, 28 Mar 2013, *Diamond with B. Dykes 23867*.

This represents the first reports of this taxon from Alabama (Kral et. al 2011, 2013). The species without varietal status has been reported from that adjacent states of Georgia, Mississippi, and Tennessee (BONAP 2011). This species was not treated in *Flora of North America* (Stapleton & Barkworth. 2007b). This variety differs from the typical variety by its larger culm diameter and gray verses black culm color (Fig. 9). The Wilcox county site was originally established around 1960 as part of Auburn University's experiments with bamboo as a possible source of pulp for paper production (Sturkie et. al 1968). The experiments were abandoned and the area converted to pine plantation, but the bamboo has persisted and spread to adjacent areas via rhizomes.

Phyllostachys sulphurea (Carrière) Rivière & C. Rivière var. **viridis** R.A. Young (Poaceae)

Vouchers: **USA**. **Alabama**. Autauga Co.: Upper Kingston Road, 0.13 mi N of Live Oak Drive at Wilderness Park, large stand in the woods, culms yellow with narrow dark green stripes, 4-5 inches in diameter, 32.478639° -86.481139°, 3 Feb 2013, *Diamond with P.C. Harris 23708*. Wilcox Co.: Dirt logging road ca. 1.50 mi due E of Alabama Hwy 28, sandy soil of pine plantation, culms yellow with thin green stripes, 32.026833° -87.294861°, 24 Feb 2013, *Diamond with P.C. Harris, B. Keener, and W. Webb 23756*.

This represents the first reports of this taxon from Alabama (Kral et. al 2011, 2013) (Fig. 10). Previously this species was reported from Georgia by BONAP (2011). This species was not treated in *Flora of North America* (Stapleton & Barkworth. 2007b). The Wilcox county site was originally established around 1960 as part of Auburn University's experiments with bamboo as a possible source of pulp for paper production (Sturkie et. al 1968). The experiments were abandoned and the area converted to pine plantation, but the bamboo has persisted and spread to adjacent areas via rhizomes.

Pseudosasa japonica (Sieb. & Zucc. ex Steud.) Makino ex Nakai (Poaceae)

Vouchers: **USA. Alabama**. Conecuh Co.: Evergreen, wooded area along a small stream W side of the old Evergreen Cemetery, E of Evergreen Baptist Church, disturbed woodland with many exotics, 31.434921° -86.950200°, 29 Dec 2012, *Diamond 23623*. Butler Co.: Greenville, Overlook Road, 0.08 mi N of Ft. Dale Street, overgrown drainage ditch, common, 31.833097° -86.626591°, *Diamond 23757*.

This represents the first reports of this taxon from Alabama (Kral et. al 2011, 2013). Previously the species has been reported from the adjacent states of Florida and Tennessee (Wunderlin & Hansen 2008; BONAP 2011). *Pseudosasa japonica* is widely cultivated and several varieties are commonly available (Stapleton & Barkworth 2007a). This species has been identified as a potential or emerging threat to natural areas in the mid-Atlantic region by the National Park Service (2012). Both records are from sites where this species was cultivated and had spread to adjacent areas via rhizomes (Fig. 11).

Rottboellia cochinchinensis (Lour.) W.D. Clayton (Poaceae)

Voucher: **USA. Alabama**. Pike Co.: US Hwy 29 at old roadside park along railroad 0.53 mi N of Needmore Road, abundant in dry sandy disturbed area along tracks in full sun, 31.835056° -85.942111°, 17 Oct 2012, *Diamond 23520*.

This represents the first report of this taxon from Pike Co., Alabama (Kral et. al 2013). Previously it has been reported from the adjacent states of Florida, Georgia, and Mississippi (Wipff 2003; Wunderlin & Hansen 2008; BONAP 2011) and from the Alabama counties of Mobile and Washington (BONAP 2011). This species was growing on xeric, sandy, disturbed soil in full sun. This location is visited by the author several times a year, and this was the first year this species was present at the site. The area was used as a site for parking road equipment while the adjacent highway was repaved and widened (Figs. 12-13). This species may have been introduced through the activity of the road crews, or it may have been introduced via the adjacent railroad. Searches along other portions of the rail line failed to turn up additional populations.

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Figure 1. *Coelorachis tuberculosa* (Poaceae).

Figure 2. *Eustachys caribaea* (Poaceae).

Figure 3. *Eustachys distichophylla* (Poaceae).

Figure 4. *Polypogon interruptus* (Poaceae).

Figure 5. *Phyllostachys aureosulcata* (Poaceae).

Figure 6 *Phyllostachys aureosulcata* (Poaceae)

Figure 7 *Phyllostachys bambusoides* (Poaceae)

Figure 8 *Phyllostachys nigra* var *nigra* (Poaceae)

Figure 9 *Phyllostachys nigra* var *henonis* (Poaceae)

Figure 10. *Phyllostachys sulphurea* var. *viridis* (Poaceae).

Figure 11. *Pseudosasa japonica* (Poaceae).

Figure 12. *Rottboellia cochinchinensis* (Poaceae).

Figure 13. *Rottboellia cochinchinensis* (Poaceae).